



Learning Target: I will solve non-linear equations using square roots and cube roots

Algebra 1 – Readiness Standard 5 – 8.EE.2

Readiness for factoring quadratic equations

Session 1: Guided Practice (Whole Group)

Directions: Below are solved problems to solve non-linear equations. For each solution step, discuss what happened and fill in the missing information.

Write	Describe
<p>1. Solve: $x^2 = 81$</p> <p>$x \cdot x = 81$</p> <p>$x \cdot x = 9 \cdot 9$ or $x \cdot x = -9 \cdot -9$</p> <p>$x = 9$ or $x = -9$</p> <p>$x = \pm 9$</p>	<p>Changed to Repeated Multiplication $x \cdot x = \underline{\hspace{2cm}}$ to eliminate the exponent</p> <p>Found Possible Values of x $9 \cdot 9$ and $-9 \cdot -9 = \underline{\hspace{2cm}}$</p> <p>Wrote the Solutions $x = \pm 9$ means $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$</p>
<p>2. Solve: $x^3 = -125$</p> <p>$x \cdot x \cdot x = -125$</p> <p>$x \cdot x \cdot x = -5 \cdot -5 \cdot -5$</p> <p>$x = -5$</p>	<p>Changed to Repeated Multiplication $x \cdot x \cdot x = \underline{\hspace{2cm}}$ to eliminate the exponent</p> <p>Found a number multiplied by itself 3 times equal to -125 $-5 \cdot -5 \cdot -5 = \underline{\hspace{2cm}}$</p> <p>Wrote the Solution $x = \underline{\hspace{2cm}}$</p>
<p>3. Solve: $x^2 = \frac{9}{16}$</p> <p>$x \cdot x = \frac{9}{16}$</p> <p>$x \cdot x = \frac{3}{4} \cdot \frac{3}{4}$ or $x \cdot x = -\frac{3}{4} \cdot -\frac{3}{4}$</p> <p>$x = \frac{3}{4}$ or $x = -\frac{3}{4}$</p> <p>$x = \pm \frac{3}{4}$</p>	<p>Changed to Repeated Multiplication $x \cdot x = \underline{\hspace{2cm}}$ to eliminate the exponent</p> <p>Found a number multiplied by itself equal to $\frac{9}{16}$? $\frac{3}{4} \cdot \frac{3}{4}$ and $-\frac{3}{4} \cdot -\frac{3}{4} = \underline{\hspace{2cm}}$</p> <p>Wrote Both Possible Solutions $x = \pm \frac{3}{4}$ means $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$</p>



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Session 1: Guided Practice (Pairs)

Directions: Complete the missing steps to solve each non-linear equation.

<p>4. $x^2 = 49$</p> <p>$x \cdot x = 49$</p> <p>$x \cdot x = \underline{\quad} \cdot \underline{\quad}$ or $x \cdot x = \underline{\quad} \cdot \underline{\quad}$</p> <p>$x = \underline{\quad}$ or $x = \underline{\quad}$</p> <p>$x = \pm \underline{\quad}$</p>	<p>5. $x^2 = 64$</p> <p>$x \cdot x = 64$</p> <p>$x \cdot x = \underline{\quad} \cdot \underline{\quad}$ or $x \cdot x = \underline{\quad} \cdot \underline{\quad}$</p> <p>$\underline{\quad}$ or $\underline{\quad}$</p> <p>$x = \underline{\quad}$</p>
<p>6. $x^2 = 225$</p> <p>$x \cdot x = \underline{\quad}$</p> <p>$x \cdot x = \underline{\quad}$ or $x \cdot x = \underline{\quad}$</p> <p>$x = \underline{\quad}$ or $x = \underline{\quad}$</p> <p>$x = \pm 15$</p>	<p>7. $x^2 = 144$</p> <p>$\underline{\quad}$</p> <p>$x \cdot x = 12 \cdot 12$ or $\underline{\quad}$</p> <p>$\underline{\quad}$ or $\underline{\quad}$</p> <p>$x = \underline{\quad}$</p>
<p>8. $x^2 = \frac{16}{121}$</p> <p>$x \cdot x = \frac{16}{121}$</p> <p>$x \cdot x = \underline{\quad} \cdot \underline{\quad}$ or $x \cdot x = -\frac{4}{11} \cdot -\frac{4}{11}$</p> <p>$x = \underline{\quad}$ or $x = -\underline{\quad}$</p> <p>$x = \pm \frac{4}{11}$</p>	<p>9. $x^2 = \frac{100}{36}$</p> <p>$x \cdot x = \frac{100}{36}$</p> <p>$\underline{\quad}$ or $\underline{\quad}$</p> <p>$\underline{\quad}$ or $x = -\frac{10}{6}$</p> <p>$x = \underline{\quad}$</p>



Algebra 1 Quick Check – Form A

Readiness Standard 5 - 8.EE.2

Name _____ Date _____

Learning Target: I will solve non-linear equations using square roots and cube roots.

Directions: Circle the solution to each equation. (Work time: 3 minutes)

<p>1.</p> $x^2 = 9$ <p>± 9 81 ± 3 4.5</p>	<p>2.</p> $x^2 = 36$ <p>6 72 ± 6 18</p>
<p>3.</p> $x^3 = 125$ <p>± 5 -5 5 375</p>	<p>4.</p> $x^3 = -27$ <p>3 ± 3 -3 -9</p>
<p>5.</p> $x^2 = \frac{16}{36}$ <p>$-\frac{4}{6}$ $\frac{4}{6}$ $\pm \frac{4}{6}$ $\pm \frac{8}{18}$</p>	<p>6.</p> $x^2 = \frac{81}{49}$ <p>$\frac{9}{49}$ $\frac{9}{7}$ $\pm \frac{9}{7}$ $\pm \frac{9}{49}$</p>



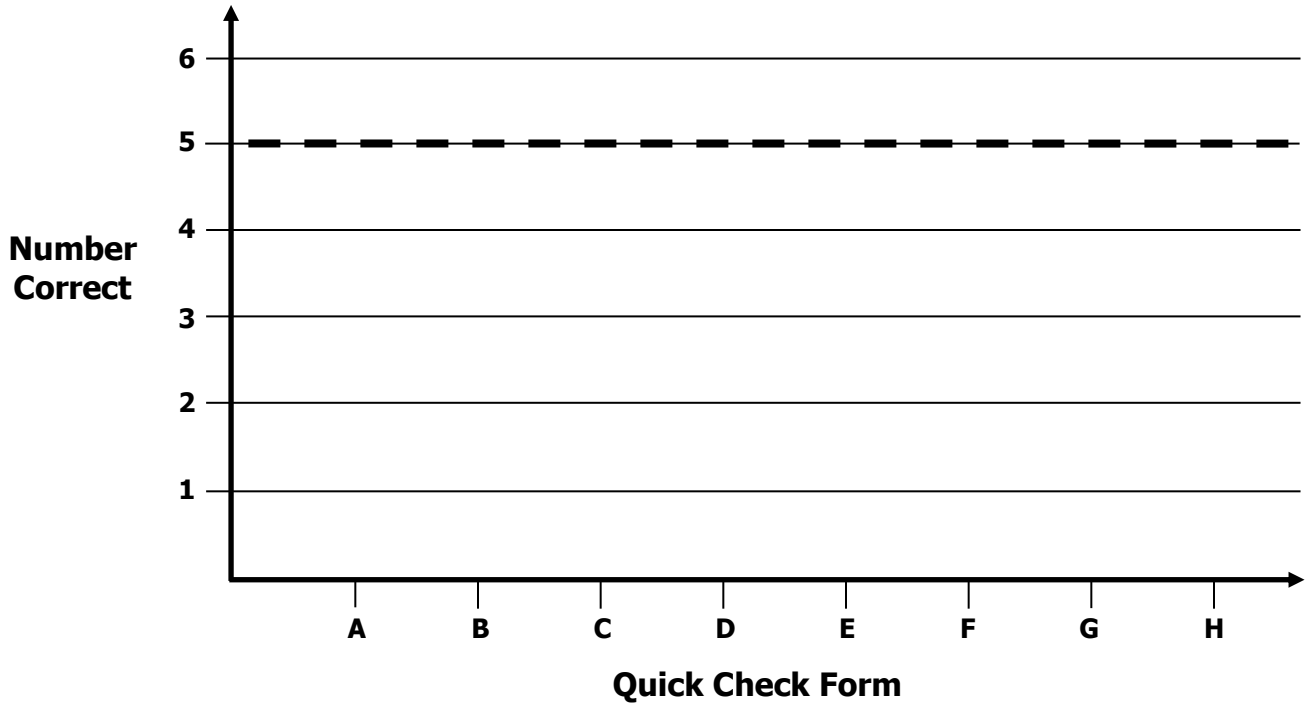
Algebra 1 Growth Chart

Readiness Standard 5 - 8.EE.2

Name _____

Learning Target: I will solve non-linear equations using square roots and cube roots.

Goal: 5 out of 6 correct



Intervention Notes	Date	Score



Learning Target: I will solve non-linear equations using square roots and cube roots

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Session 2: Guided Practice (Whole Group)

Directions: Below are solved problems to solve non-linear equations. For each solution step, discuss what happened and fill in the missing information.

Write	Describe
<p>1. Solve: $x^3 = 8$</p> <p>$x \cdot x \cdot x = 8$</p> <p>$x \cdot x \cdot x = 2 \cdot 2 \cdot 2$</p> <p>$x = 2$</p>	<p>Changed to Repeated Multiplication $x \cdot x \cdot x = \underline{\hspace{2cm}}$ to eliminate the exponent</p> <p>Found a number multiplied by itself 3 times equal to 8 $2 \cdot 2 \cdot 2 = \underline{\hspace{2cm}}$</p> <p>Wrote the Solution $x = \underline{\hspace{2cm}}$</p>
<p>2. Solve: $x^2 = 25$</p> <p>$x \cdot x = 25$</p> <p>$x \cdot x = 5 \cdot 5$ or $x \cdot x = -5 \cdot -5$</p> <p>$x = 5$ or $x = -5$</p> <p>$x = \pm 5$</p>	<p>Changed to Repeated Multiplication $x \cdot x = \underline{\hspace{2cm}}$ to eliminate the exponent</p> <p>Found a number multiplied by itself equal to 25? $5 \cdot 5$ and $-5 \cdot -5 = \underline{\hspace{2cm}}$</p> <p>Wrote Both Possible Solutions $x = \pm 5$ means $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$</p>
<p>3. Solve: $x^3 = \frac{27}{64}$</p> <p>$x \cdot x \cdot x = \frac{27}{64}$</p> <p>$x \cdot x \cdot x = \frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4}$</p> <p>$x = \frac{3}{4}$</p>	<p>Changed to Repeated Multiplication $x \cdot x \cdot x = \underline{\hspace{2cm}}$ to eliminate the exponent</p> <p>Found a number multiplied by itself equal to $\frac{27}{64}$?</p> <p>$\frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4} = \underline{\hspace{2cm}}$</p> <p>Wrote the Solutions $x = \underline{\hspace{2cm}}$</p>



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Session 2: Guided Practice (Pairs)

Directions: Complete the missing steps to solve each non-linear equation

<p>4. Solve: $x^3 = 27$</p> <p>$x \cdot x \cdot x = 27$</p> <p>$x \cdot x \cdot x = 3 \cdot \underline{\quad} \cdot \underline{\quad}$</p> <p>$x = \underline{\hspace{2cm}}$</p>	<p>5. Solve: $x^3 = 125$</p> <p>$x \cdot x \cdot x = \underline{\hspace{2cm}}$</p> <p>$x \cdot x \cdot x = \underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad}$</p> <p>$x = \underline{\hspace{2cm}}$</p>
<p>6. Solve: $x^3 = 216$</p> <p>$x \cdot x \cdot x = 216$</p> <p>$x \cdot x \cdot x = \underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad}$</p> <p>$x = 6$</p>	<p>7. Solve: $x^3 = -64$</p> <p>$x \cdot x \cdot x = \underline{\hspace{2cm}}$</p> <p>$x \cdot x \cdot x = \underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad}$</p> <p>$x = \underline{\hspace{2cm}}$</p>
<p>8. Solve: $x^3 = \frac{8}{1000}$</p> <p>$x \cdot x \cdot x = \frac{8}{1000}$</p> <p>$x \cdot x \cdot x = \underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad}$</p> <p>$x = \underline{\quad}$</p>	<p>9. Solve: $x^3 = -\frac{343}{27}$</p> <p>$x \cdot x \cdot x = \underline{\hspace{2cm}}$</p> <p>$x \cdot x \cdot x = \underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad}$</p> <p>$x = -\frac{7}{3}$</p>



Algebra 1 Quick Check – Form B

Readiness Standard 5 - 8.EE.2

Name _____ Date _____

Learning Target: I will solve non-linear equations using square roots and cube roots.

Directions: Circle the solution to each equation. (Work time: 3 minutes)

<p>1.</p> $x^2 = 100$ <p>± 100 $10,000$ ± 10 50</p>	<p>2.</p> $x^2 = 25$ <p>± 5 50 5 ± 50</p>
<p>3.</p> $x^3 = -8$ <p>± 24 -2 ± 2 -24</p>	<p>4.</p> $x^3 = 216$ <p>6 -6 ± 6 72</p>
<p>5.</p> $x^2 = \frac{64}{25}$ <p>$-\frac{8}{25}$ $\pm \frac{8}{5}$ $\frac{8}{5}$ $\pm \frac{32}{12.5}$</p>	<p>6.</p> $x^2 = \frac{9}{36}$ <p>$\pm \frac{3}{36}$ $\frac{3}{18}$ $\pm \frac{3}{6}$ $\frac{3}{6}$</p>



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Session 3: Guided Practice (Whole Group)

Directions: Below are solved problems to solve non-linear equations. For each solution step, discuss what happened and fill in the missing information.

Write	Describe
<p>1. Solve: $x^2 = 81$</p> $\sqrt{x^2} = \sqrt{81}$ $x = \pm 9$	<p>Took the square root of each side</p> $\sqrt{x^2} = \sqrt{\underline{\quad} \cdot \underline{\quad}} = \underline{\quad}$ <p>to eliminate the exponent</p> <p>Simplified each radical</p> $\sqrt{81} = \sqrt{\underline{\quad} \cdot \underline{\quad}} \text{ or } \sqrt{\underline{\quad} \cdot \underline{\quad}}$
<p>2. Solve: $x^3 = -64$</p> $\sqrt[3]{x^3} = \sqrt[3]{-64}$ $x = -4$	<p>Took the cube root of each side</p> <p>Since $\sqrt[3]{x^3} = \sqrt{\underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad}} = x$ to eliminate the exponent</p> <p>Simplified each radical</p> $\sqrt[3]{-64} = \sqrt{\underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad}}$
<p>3. Solve: $x^2 = \frac{9}{25}$</p> $\sqrt{x^2} = \sqrt{\frac{9}{25}}$ $x = \pm \frac{3}{5}$	<p>Took the square root of each side</p> $\sqrt{x^2} = \sqrt{\underline{\quad} \cdot \underline{\quad}} = \underline{\quad}$ <p>to eliminate the exponent</p> <p>Simplified each radical</p> $\sqrt{\frac{9}{25}} = \sqrt{\underline{\quad} \cdot \underline{\quad}} \text{ or } \sqrt{\underline{\quad} \cdot \underline{\quad}}$



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Session 3: Guided Practice (Pairs)

Directions: Complete the missing steps to solve each non-linear equation.

<p>4. $x^2 = 49$</p> <p>$\sqrt{x^2} = \sqrt{\quad}$</p> <p>$\sqrt{x^2} = \sqrt{\quad \cdot \quad}$ or $\sqrt{\quad \cdot \quad}$</p> <p>$x = \pm \quad$</p>	<p>5. $x^2 = 64$</p>
<p>6. $x^3 = 125$</p> <p>$\sqrt[3]{x^3} = \sqrt[3]{\quad}$</p> <p>$\sqrt[3]{x^3} = \sqrt{\quad \cdot \quad \cdot \quad}$</p> <p>$x = \quad$</p>	<p>7. $x^3 = -27$</p>
<p>8. $x^2 = \frac{16}{81}$</p> <p>$\sqrt{x^2} = \sqrt{\quad}$</p> <p>$\sqrt{x^2} = \sqrt{\quad \cdot \quad}$ or $\sqrt{\quad \cdot \quad}$</p> <p>$x = \pm \quad$</p>	<p>9. $x^3 = \frac{64}{8}$</p>



Algebra 1 Quick Check – Form C

Readiness Standard 5 - 8.EE.2

Name _____ Date _____

Learning Target: I will solve non-linear equations using square roots and cube roots.

Directions: Circle the solution to each equation. (Work time: 3 minutes)

<p>1.</p> $x^2 = 16$ <p>± 4 8 4 ± 8</p>	<p>2.</p> $x^2 = 64$ <p>-8 ± 32 ± 8 128</p>
<p>3.</p> $x^3 = 27$ <p>3 ± 3 ± 9 81</p>	<p>4.</p> $x^3 = -64$ <p>192 -4 4 ± 4</p>
<p>5.</p> $x^2 = \frac{49}{100}$ <p>$\frac{7}{100}$ $\frac{7}{10}$ $\pm \frac{7}{100}$ $\pm \frac{7}{10}$</p>	<p>6.</p> $x^2 = \frac{36}{16}$ <p>$\frac{18}{8}$ $\pm \frac{6}{16}$ $\pm \frac{6}{4}$ $\frac{6}{4}$</p>



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Session 4: Guided Practice (Whole Group)

Directions: Below are solved problems to solve non-linear equations. For each solution step, discuss what happened and fill in the missing information.

Write	Describe
<p>1. Solve: $x^2 = 64$</p> $\sqrt{x^2} = \sqrt{64}$ $x = \pm 8$	<p>Took the square root of each side</p> $\sqrt{x^2} = \sqrt{\underline{\quad} \cdot \underline{\quad}} = \underline{\quad}$ <p>to eliminate the exponent</p> <p>Simplified each radical</p> $\sqrt{64} = \sqrt{\underline{\quad} \cdot \underline{\quad}} \text{ or } \sqrt{\underline{\quad} \cdot \underline{\quad}}$
<p>2. Solve: $x^3 = -125$</p> $\sqrt[3]{x^3} = \sqrt[3]{-125}$ $x = -5$	<p>Took the cube root of each side</p> <p>Since $\sqrt[3]{x^3} = \sqrt{\underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad}} = x$</p> <p>to eliminate the exponent</p> <p>Simplified each radical</p> $\sqrt[3]{-125} = \sqrt{\underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad}}$
<p>3. Solve: $x^2 = \frac{36}{121}$</p> $\sqrt{x^2} = \sqrt{\frac{36}{121}}$ $x = \pm \frac{6}{11}$	<p>Took the square root of each side</p> $\sqrt{x^2} = \sqrt{\underline{\quad} \cdot \underline{\quad}} = \underline{\quad}$ <p>to eliminate the exponent</p> <p>Simplified each radical</p> $\sqrt{\frac{36}{121}} = \sqrt{\underline{\quad} \cdot \underline{\quad}} \text{ or } \sqrt{\underline{\quad} \cdot \underline{\quad}}$



Name _____ Date _____

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Session 4: Guided Practice (Pairs)

Directions: Solve each non-linear equation.

4. $x^2 = 36$	5. $x^2 = 81$
6. $x^3 = 8$	7. $x^3 = -64$
8. $x^2 = \frac{49}{81}$	9. $x^3 = \frac{125}{27}$



Algebra 1 Quick Check – Form D

Readiness Standard 5 - 8.EE.2

Name _____ Date _____

Learning Target: I will solve non-linear equations using square roots and cube roots.

Directions: Circle the solution to each equation. (Work time: 3 minutes)

<p>1.</p> $x^2 = 49$ <p>± 7 98 -7 ± 98</p>	<p>2.</p> $x^2 = 81$ <p>± 162 -9 ± 9 162</p>
<p>3.</p> $x^3 = -216$ <p>6 -6 ± 6 -72</p>	<p>4.</p> $x^3 = 8$ <p>2 ± 2 24 ± 24</p>
<p>5.</p> $x^2 = \frac{25}{16}$ <p>$\frac{5}{8}$ $\frac{5}{4}$ $\pm \frac{5}{4}$ $\pm \frac{5}{16}$</p>	<p>6.</p> $x^2 = \frac{64}{81}$ <p>$\frac{8}{9}$ $\pm \frac{8}{9}$ $\pm \frac{32}{81}$ $\frac{8}{81}$</p>



Algebra 1 Quick Check – Form E

Readiness Standard 5 - 8.EE.2

Name _____ Date _____

Learning Target: I will solve non-linear equations using square roots and cube roots.

Directions: Circle the solution to each equation. (Work time: 3 minutes)

<p>1.</p> $x^2 = 9$ <p>± 9 81 ± 3 4.5</p>	<p>2.</p> $x^2 = 36$ <p>6 72 ± 6 18</p>
<p>3.</p> $x^3 = 125$ <p>± 5 -5 5 375</p>	<p>4.</p> $x^3 = -27$ <p>3 ± 3 -3 -9</p>
<p>5.</p> $x^2 = \frac{16}{36}$ <p>$-\frac{4}{6}$ $\frac{4}{6}$ $\pm \frac{4}{6}$ $\pm \frac{8}{18}$</p>	<p>6.</p> $x^2 = \frac{81}{49}$ <p>$\frac{9}{49}$ $\frac{9}{7}$ $\pm \frac{9}{7}$ $\pm \frac{9}{49}$</p>



Algebra 1 Quick Check – Form F

Readiness Standard 5 - 8.EE.2

Name _____ Date _____

Learning Target: I will solve non-linear equations using square roots and cube roots.

Directions: Circle the solution to each equation. (Work time: 3 minutes)

<p>1.</p> $x^2 = 100$ <p>± 100 $10,000$ ± 10 50</p>	<p>2.</p> $x^2 = 25$ <p>± 5 50 5 ± 50</p>
<p>3.</p> $x^3 = -8$ <p>± 24 -2 ± 2 -24</p>	<p>4.</p> $x^3 = 216$ <p>6 -6 ± 6 72</p>
<p>5.</p> $x^2 = \frac{64}{25}$ <p>$-\frac{8}{25}$ $\pm \frac{8}{5}$ $\frac{8}{5}$ $\pm \frac{32}{12.5}$</p>	<p>6.</p> $x^2 = \frac{9}{36}$ <p>$\pm \frac{3}{36}$ $\frac{3}{18}$ $\pm \frac{3}{6}$ $\frac{3}{6}$</p>



Algebra 1 Quick Check – Form G

Readiness Standard 5 - 8.EE.2

Name _____ Date _____

Learning Target: I will solve non-linear equations using square roots and cube roots.

Directions: Circle the solution to each equation. (Work time: 3 minutes)

<p>1.</p> $x^2 = 16$ <p>± 4 8 4 ± 8</p>	<p>2.</p> $x^2 = 64$ <p>-8 ± 32 ± 8 128</p>
<p>3.</p> $x^3 = 27$ <p>3 ± 3 ± 9 81</p>	<p>4.</p> $x^3 = -64$ <p>192 -4 4 ± 4</p>
<p>5.</p> $x^2 = \frac{49}{100}$ <p>$\frac{7}{100}$ $\frac{7}{10}$ $\pm \frac{7}{100}$ $\pm \frac{7}{10}$</p>	<p>6.</p> $x^2 = \frac{36}{16}$ <p>$\frac{18}{8}$ $\pm \frac{6}{16}$ $\pm \frac{6}{4}$ $\frac{6}{4}$</p>



Algebra 1 Quick Check – Form H

Readiness Standard 5 - 8.EE.2

Name _____ Date _____

Learning Target: I will solve non-linear equations using square roots and cube roots.

Directions: Circle the solution to each equation. (Work time: 3 minutes)

<p>1.</p> $x^2 = 49$ <p>± 7 98 -7 ± 98</p>	<p>2.</p> $x^2 = 81$ <p>± 162 -9 ± 9 162</p>
<p>3.</p> $x^3 = -216$ <p>6 -6 ± 6 -72</p>	<p>4.</p> $x^3 = 8$ <p>2 ± 2 24 ± 24</p>
<p>5.</p> $x^2 = \frac{25}{16}$ <p>$\frac{5}{8}$ $\frac{5}{4}$ $\pm \frac{5}{4}$ $\pm \frac{5}{16}$</p>	<p>6.</p> $x^2 = \frac{64}{81}$ <p>$\frac{8}{9}$ $\pm \frac{8}{9}$ $\pm \frac{32}{81}$ $\frac{8}{81}$</p>